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Analysis of the Extent of Red Light Running in Minna, North-Central Nigeria

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ABSTRACT

This research pursued the objectives of assessing the awareness, perception, and levels of adherence of road users to traffic rules and regulations. The study was carried out in Minna and the major signalized roads were the target of the research. The research applied the survey research methodology, which involves carrying volumetric count of vehicles running the red lights on the signalized routes. The research therefore, found out that, majority of the violators of the traffic signals were the motorcycle riders, closely followed by the tricycle operators; the commercial vehicle owners also form a major percentage of violators of the red light rules in the city. The research, therefore, recommended that, strict measures aimed at ensuring immediate compliance with the traffic signals should be implemented, through fines and sanctions on violators to impoundment of offending vehicles. The research concluded that, if instant measures are not put in place to check the menace of the red light running, it will have serious adverse effect on the social and economic strata of the city.

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1. Introduction

Over the years, the basic measures to address road traffic accidents (RTAs) in Nigeria have been characterised by a lack of strong political will, concern and priority. Usually the responses experienced have been characterised by high vigilance following a major road accident, which gradually dies off with the passing of time (Khayesi, 2004). Manifestation of violation of road traffic rules in Nigeria includes; failure to use seat belts, over speeding, reckless driving, dangerous overtaking, driving without authorized plates, lack of fire extinguisher, making phone calls while driving, failure to obey traffic lights, traffic signs and over loading among others. Private and commercial motorcyclists are not left out of this malaise.

Adherence of road users to traffic rules and regulations is an on-going challenge in Minna metropolis the capital of Niger State. Traffic rules are said to be violated when drivers and pedestrians deliberately disobey formally prohibited or socially accepted codes of driving behaviour. Niger State government introduced traffic light across the major busy or heavy traffic areas in Minna as a way of

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ensuring compliance with road traffic rules by drivers. However, despite these efforts, there has been continued and increasing non-compliance with road traffic rules by drivers, including those driving personal vehicles and motorcycles. This research work carried out a clear assessment of underlying factors that influence road users of not adhering to the traffic rules and regulations in Minna metropolis. Motorcyclists, Motorists and passengers are among the most vulnerable road users and represent an important group to target for reducing road traffic injuries (Johnson and Adebayo, 2011). Traffic rules play a very important role in a country. These rules are made to avoid traffic, congestion in towns and cities. Traffic rules in Nigeria are primarily designed to prevent and reduce road accidents and clear obstructions on the high way to ensure free flow of traffic. But a recent study conducted by Federal Road Safety Commission revealed that more than 80 per cent of all road accidents which cause serious injuries, loss of properties and lives were attributed to poor knowledge of traffic rules and regulations by motorists and non-adherence to them.

Road crashes started in Lagos, Nigeria in 1906. Ever since, it has been a major killer in Nigeria (Tunde, et al., 2012). The attempt to reduce the number and severity of road crashes necessitated the formulation of road traffic regulations to guide operation, conduct and other issues relating to the road and the road users. There are various categories of road users ranging from vehicle owners, motorcyclists, cyclists, tricyclists and pedestrians. The use of motorcycles for commuting passengers gained accelerated momentum in Nigeria after the economic recession of the early 1980s (Tunde et al., 2012).

The study will add knowledge on understanding what rules and regulation risk factors contribute to the occurrence of road traffic accidents and related injuries in a restricted risk area in Minna metropolis. The data obtained in this study, can be used by the road safety authorities for planning and evaluating road safety measures. The data can also be utilized by the health authorities in Minna metropolis and possibly at the nation level for planning health care delivery at Minna metropolis. The recommendations given if considered are going to benefit the public at large on prevention of road accidents. The outcome of this research can be used by Niger State Ministry of Finance i.e. by charging the road users that is not adhere to traffic rules and regulation. The data can also be utilized as baseline data in future related researches. The aim of the study is to assess the rate at which the road users in Minna comply with the traffic rules and regulations within the town. In order to achieve this aim, the following objectives were set that is; To; assess the awareness and perception of road users to traffic rules and regulation in Minna metropolis; examine the levels of adherence of road users to traffic rules and regulations; appraise the factors that influence the non-adherence of road users to traffic rules and regulations; and evaluate the impacts of road traffic rules and regulation on the road users.

The theory of planned behaviour predicts an individual's intention to engage in behaviour at a specific time and place. It posits that individual behaviour is driven by behaviour intentions, where behaviour intentions are as a function of three determinants; an individual's attitude towards behaviour, subjective norm and perceived behavioural control (Ajzen, 1991). Ajzen (1991), proposed the Theory of Planned Behaviour (TPB) wherein the individual's behaviour is best predicted by one's intentions, intentions are in turn predicted by attitudes about the behaviour, the subjective norms (a person's perception of important other's believe that he or she should or should not perform the behaviour) encasing the execution of the behaviour, and the individual's perception of their control over the behavior. Theory of planned behaviour provides a useful conceptual framework for dealing with the complexities of human social behaviour. The theory incorporates some of the central concepts in social and behaviour science, and it defines these concepts in a way that permits prediction and understanding of particular behaviours in specified contexts. Attitudes towards the behaviour, subjective norms with respect to the behaviour, and perceived control over the behaviour are usually found to predict behavioural intentions with a high degree of accuracy. In turn, these intentions, in combination with perceived behavioural control, can account for a considerable proportion of variance in behaviour. In order to understand the origin of the theory of planned behaviour, a brief history is given thus; the theory of planned behaviour was proposed by Icek Ajzen in 1985 through his article 'from intentions to actions: A theory of planned behaviour. (Ajzen, 1985) The theory was developed from the theory of reasoned action, which was proposed by Martin Fishbein together with Icek Ajzen in 1975. The theory of

reasoned action was in turn grounded in various theories of attitude such as learning theories, expectancy value theories, consistency theories (such as Heider's balance theory, Osgood and Tannebaum's Congruity Theory, and Festinger's Dissonance Theory) and attribution theory (Fishbein, 1975). According to the theory of reasoned action, if people evaluate the suggested behaviour as positive (attitude), and if they think their significant others want them to perform the behaviour (subjective norm), this results in a higher intention (motivations) and they are more likely to do so. A high correlation of attitudes and subjective norms and behavioural intentions, and subsequently to behaviour has been confirmed in many studies (Sheppard, 1988). Since 1985 till date, the theory of planned behaviour has been applied in various fields as accounted for below.

First, compliance with speed limits is well suited to explorations based within the theory of planned behaviour because compliance with speed limits can be considered as an intentional and conscious act on the part of the driver. In particular, the driver has control over the behaviour they intend to do and therefore should be able to make their intention a behavioural reality. Ajzen's theory of planned behaviour was recently applied to social networking. Baker and White (2010) conducted a study examining the use of the theory of planned behaviour to predict adolescents' use of social networking. A questionnaire was given to 160 students that measured the component of Ajzen's theory and then they were asked to return a week later to report their social networking site use in preceding week. Their study found support for the theory of planned behaviour's component of attitude, perceived behavioural control, and group norms in predicting intentions to use social networking sites. They then found support that intentions predict behaviour.

Robinson and Doverspike (2009) applied the theory of planned behaviour to individual's intentions to enrol in either an online version or a traditional classroom version of an experimental psychology class. A sample of 112 psychology majors, ages ranging from 18 to 51 years old, completed a questionnaire which included a fabricated description of an experimental psychology course at the university. The theory of planned behaviour component s accounted for 12.3percent of variance in the intention of quitting with the strongest impact coming from past behaviours. Although the theory of planned behaviour has been applied to diverse studies, it has also been criticised as seen below; the theory of planned behaviour is a well-known theory addressing the relationship between attitude and behaviour. However, research using this theory does not always produce the expected high correlations amongst the components of the theory, or account for a high proportion of the behaviour.

The theory of planned behaviour which is a psychology based theory has been criticised for its effectiveness when applied as a conceptual framework in research findings. There is evidence that theory based interventions are more successful (Abraham et al). Below is the relationship between the theory of planned behaviour to traffic rules and regulation; Social norms are among the strongest predictors of behaviour (Ajzen, 2006; Blanton, et al. 2008). In driving, these norms are motivated by the benefits drivers foresee in making any 'sensible' action, 'the good thing' or 'what one ought to do'. These motivations are contextual since they depend on the individual, people around the actor and other external factors. For example, while driving, is it sensible to switch off the phone, put it on 'silent' or leave the volume on? Decision by drivers on such issue may be in violation of set rules and this may be encouraged by the absence of rewards for compliance. That is why a study (Ajzen, 2006) found that fictional films demonstrating life-threatening use of motor vehicles are perceived as heroic humorous although they violate well formulated and interpreted road traffic rules. The effect of social norms in driving is reconfirmed by Gaymard (2009) in the assertion that interventions to increase the level of compliance with road traffic rules have not been effective because formal rules and human conduct are studies from an individualist perspective rather than being a socially shared knowledge and understanding.

People respected by drivers influence their compliance with traffic rules (injunctive norms). Researchers like Bjorklund and Aberg (2005), Gopi and Ramayah (2007) and Lee et al. (2007) in a study on drink-driving, and Stasson and Fishbein (2006) in a study on the use of safety belts confirms this relationship. The respected people include peers, spouses, mentors, role-models and bosses. Injunctive norms are motivated by rewards associated with each action and that is why respected people 'who practice what they preach' have a stronger influence on the actors than the passive ones (Smith and Louis, 2008).

Descriptive norms describe perception of what most group members actually do and this is a result of a conviction that 'if everybody is doing it, then it must be a sensible thing to do' (Rivis and Sheeran, 2003). These actions may include speeding violations due to time pressures, impatience, annoyance and hospitality towards other drivers (Walsh, White, Hyde and Watson, 2008). These actions may lead to droving too closely behind a vehicle, violations of right of ways, risky overtaking and cutting in on other motorists. Perceived behaviour control is the extent of performance of a specific behaviour by an individual according to their discretion (Rivis and Sheeran, 2003; Gopi and Ramayah, 2007; Walsh et al. 2008). Hence, perceived behaviour control (Kraft et al 2005) can be internal (e.g. knowledge, skills, willpower) or external (e.g. time, cooperation of others). Such environment provides opportunities for actions that may be contrary to rules or socially accepted codes of conduct, like risky overtaking. Certain studies on driving revealed that perceived behaviour control was the main predictor of actual behaviour (Newman, Waston and Murray, 2004; Gopi and Ramayah, 2007; Walsh et al. 2008). Road obstructions and road control system moderates the relationship between perceived descriptive norms, perceived injunctive norms, perceived behaviour control and compliance with road traffic rules.

Traffic signals are intended to promote safe and efficient traffic flow at busy intersections. However, the level of safety achieved is largely dependent on drivers' compliance with the signals. Research shows that many drivers routinely violate red signals, placing themselves and other road users at risk for serious collisions. Analyses of red light violation data from 19 intersections in four states found that violation rates averaged 3.2 per intersection per hour (Hill and Lindly, 2003). Similarly, a study conducted during several months at five busy intersection approaches in Fairfax City, Virginia, found that violation rates averaged 3 per intersection per hour (Retting et al., 1999). During peak travel times, red light running was more frequent. Crashes resulting from red light running are a frequent occurrence. A nationwide study of 9,951 vehicles involved in fatal crashes at traffic signals in 1999 and 2000 estimated that 20 percent of the vehicles failed to obey the signals (Brittany et al., 2004). In 2005, more than 800 people were killed and an estimated 165,000 were injured in crashes that involved red light running (Insurance Institute for Highway Safety, 2006). About half of the deaths in these crashes were pedestrians and occupants in other vehicles who were hit by the red light runners.

Road Traffic Problems: Rangwala (2011) stated that the problems of traffic on roads result from the performances and requirements of the following three components; Fixed facilities for the accommodation of traffic on the road; Human beings using the road; and Vehicles on the road; The traffic controls and improvements can be reduced to the behaviour of the three components namely education, enforcement and engineering. Chances of road accidents occur due to complex flow pattern of vehicular traffic, presence of mixed traffic and pedestrians. Traffic engineering should aim at safe movements on roads to bring down occurrences of road accidents to the minimum possible extent. According to Rangwala (2011), it was found that in most cases, the following four general observations can easily be arrived at; Most of the road accidents occur on straight roads; Favorable range of speeds at which most of the accidents occur is 15 – 30 km per hour only; The greatest number of sufferers in road accidents is that of the pedestrians; The human failure was responsible for most of the road accidents. He suggested measures to ensure safety of pedestrians to include the provision of traffic islands coupled with proper markings for pedestrians crossing at the road intersections among others. Red Light Running (RLR): Red-light running is a serious intersection safety issue across the nation. According to the United States National Highway Traffic Safety Administration's (NHTSA) Traffic Safety Facts 2008 Report, there were more than 2.3 million reported intersection-related crashes, resulting in more than 7,770 fatalities and approximately 733,000 injury crashes in 2008. NHTSA's Fatality Analysis Reporting System (FARS) reports that red-light running crashes alone caused 762 deaths in 2008. An estimated 165,000 people are injured annually by red-light runners. The Insurance Institute for Highway Safety (IIHS) reports that half of the people killed in red-light running crashes are not the signal violators. They are drivers and pedestrians hit by red-light runners.

According to the findings of Institute of Transport Engineers (2003), in the United States of America, a crash caused by a driver who runs a red light is more likely to result in serious injury or death. Most people run red lights because they are in a hurry, when in fact they only save seconds. The findings also revealed the following facts: Deaths caused by red light running are increasing at more than three times

the rate of increase for all other fatal crashes; More people are injured in crashes involving red light running than in any other crash type; Reduction in red light running through a comprehensive red light camera program will promote and protect the public health, safety and welfare of Irving citizens.

Road traffic accident occurs worldwide but the incidence is more in developing countries. Annually, about 1.24 million people die each year as a result of road traffic crashes. Road traffic injuries are the leading cause of death among young people, aged 15 to 29 years. 91 percent of the world's fatalities on the road occur in low income countries, even though those countries have approximately half of the world's vehicles. Half of those dying on the world's roads are 'vulnerable road users': pedestrians, cyclists and motorcyclists. Without action, road crashes are predicted to result in deaths of around 1.9 million people annually by 2020. Only 28 countries representing 416 million people (7 percent of the world's population) have adequate laws that address all five risk factors (speed, drink-driving, helmets, seat belts and child restraints) (WHO, 2013).

In Nigeria today, hardly a day goes by without the occurrence of a road traffic accident leading to generally increasing incident of morbidity and mortality rates as well as financial cost to both society and the individual involved. Nigeria has the highest road traffic accident rates as well as well as the largest number of death per 10,000 vehicles (Sheriff, 2009). One may be tempted to believe that the level of awareness on the causes of road traffic accidents is very low among Nigerians put differently; Nigerian roads have become killing fields without protection of their users. Travellers heave a sigh of relief if they make their destinations (Eze, 2012). Contrary to the general belief that Nigerians possess very low level of awareness on the cause of road traffic accidents, previous research has shown that Nigerians know quite a lot about what could cause road traffic accidents (Asalor, 2010).

The failure of drivers to comply with basic road safety legislations is the main cause of serious crashes in the world at large and in Nigeria today. Compliance with the road safety is the act of obedience of rules guiding the usage of the roads by road users. The sequential objectives of these rules are; to avoid conflict among road users; prevent events that are unpleasant to the road users; and mitigate the effect of the unpleasant events. Non-compliance carries penalties and penalties as defined by the road traffic regulation agencies differ from country to country (Southgate & Mirrlees-Black, 1991; Zaal, 1994).

Olagunju (2009) observes that lack of efficient and effective traffic law enforcement has been responsible for several accidents in the country especially among motorcycle operators. Olagunju also noted that participants at a one-day workshop on motorcycle operations in Nigeria organised by the Federal Road Safety Corps in March 2006 expressed dismay at the level of disobedience to traffic rules and regulations by the riders. The conduct of theses commercial motorcyclists characterised by poor knowledge of traffic rules and regulations, engaging in drugs and use of Mobile phones while riding resulted in many motorcycle accidents. Motorcycles account for one out of every four vehicle involved in crashes in Nigeria. The basic question has always been that do these motorcycles comply with basic requisite safety rules? In a study of 500 motorcyclists in Kagang, Selangar, Malaysia, it was found that 54.4% of the motorcyclists used helmets properly; 21.4% used it improperly; while 24.2% did not wear helmets. Age, gender, race, formal education, prior accident, experience and type of licence held were found to be significantly related to the usage of crash helmet (Kulanthayan, et al. 2000).

A rural study of crash helmet usage in Nigeria has found zero compliance rate (Owoaje, et al 2005) apart from helmet usage, other studies with compliance with regulations such as Arosayin (2007) found compliance rate with driver licence at 57% among commercial motorcyclists in Illorin, Nigeria. The non-compliance was estimated about 43%. The main reasons given for not having driver's licence were high cost of acquisition and weak enforcement. The same survey also found total compliance with the minimum age requirement and engine capacity. In terms of crash helmet, the compliance rate was at 13.5% due to weak enforcement (Arosayin 2009).

Iribogbe, et al. (2009) found among 996 commercial motorcyclists in Benin City, Nigeria that 26.5% had no driver license while 73.5% had it. Only 27.255 of those who had license actually took a road test before they were issued the license. It further showed that 56.4% of the operators had crash helmets but do not use them regularly due to what they termed 'inconvenience' and high cost. Incidences of under aged drivers were also recorded as the minimum age found in the study was 16years against the stipulated legal minimum of 18

years. Evidences of the use of motorcycles with lower capacity were found in the works of Oluwadiya, et al. (2009). The range of engine capacity was between 85cc and 125cc. In the study, about 15% of the operators carry more than one passenger; and 96.5% were found not wearing safety helmet.

Nwachukwu (1998) post that the observance and enforcement of road safety laws and regulations has contributed positively to the significant reduction of loss of lives and property on the roads. He further states that these laws and regulations have suffered violent abuses from motorists and unscrupulous members of the public as well as misinterpretations. The author adds that there are instances where special Mobile courts are circumstance; and defaulter who is sentenced to a term of imprisonment with option of fine. According to Nwachukwu (1998) the idea of Mobile court is to facilitate the trial of road traffic offenders thereby ensuring discipline on the highways.

2. The Study Area

2.1 Description and Location of Setting

Niger State was created on 3rd February, 1976 from the defunct north-western state by the Late Head of State, General Murtala Ramat Mohammed. The State however, came into being on 1st April, the same year. At the inception of the State Administration in 1976, there were only eight local government areas. Right now they have grown up to twentyfive local government areas. The state is located on latitude 10° 00'N and longitude 6° 00'E. State has a total population of 3,950,249 (NPC, 2006) with a total area of 76,363 km2 (29,484 sq. mi).

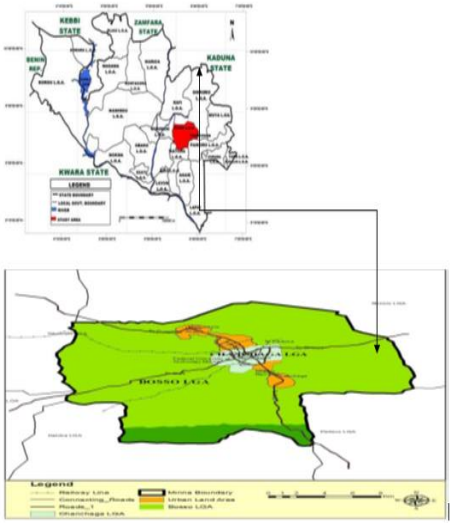

Figure 1. Location of Niger State and Minna
Source: Ministry of Land and Housing, (2014).

Minna town lies on latitude 9°.38' N and Longitude 6°.33' East. Minna combines the statuses of a State capital with that of a local government area headquarter (see Figure 1). The town span from Tudun Fulani in the Northwest to Chanchaga in the South. Minna is about 135 km away from Abuja Federal Capital Territory, and 300km away from Kaduna city to the north. Within Niger state, it is about 90 km away from Bida to the south, 100km away from Suleja to the east and about 130 km from Kontagora to the west (Minna Master plan, 1979).

3. Materials and Method

This research work is designed, putting into keen consideration; the compliance of road users to traffic rules and regulations in Minna metropolis and seeks to measure the level or rate of compliance within the city and also recommend possible solutions to the issues of non- compliance to traffic rules and regulations in Minna. Researches of this type usually involve data collection and the two basic sources of data collection for this work are primary and secondary sources. Primary sources involve the methods applied to obtain relevant raw data for the work. The secondary sources involve information from relevant organisations, internet, local and international and journals.

Three methods were adopted for this research in order to source out primary data and they include: Traffic count, Data capture and Oral interview. The traffic count was carried out for six (6) hours daily during peak hours (08:00am-10:00am, 12:00pm-02:00pm and 04:00pm-06:00pm) for two week days (Monday and Thursday) and one day of the weekend (Saturday). The traffic count was conducted at six points namely; Shiroro road intersection, Top Medical/Paiko road intersection, and Obasanjo Complex Road for a period of three days (Monday, Thursday and Saturday), while another three points namely; Government House road, high point international school junction along Shiroro road and Mobil axis for only a day.

The vehicles were categorised into five (5) to facilitate discerning the category of violators. The five categories include; commercial motorcycles, private motorcycles, tricycles (KEKE NAPEP), commercial cars/buses, and private cars/buses. All the categories were observed simultaneously throughout the duration of the count. Digital camera was employed to acquire images of different violating situations during the period of the

survey. The two major stakeholders of the road which includes the road users and the officials that regulates and controls traffic were interviewed in order to get viable information that would help fulfill the objectives of this research.

The road users that were interviewed were categorized into commercial and non-commercial road users. For commercial road users, the major road transport union stakeholders within Minna metropolis (NURTW, NSTA and National Commercial tricycle and motorcycle owners and rider's association Minna branch) were interviewed and for private road users, individual motorcycle and vehicle owners were interviewed. The law traffic control/regulation Officers within Minna as relating to traffic control (Vehicle Inspection Officers, Federal Road Safety Corps Nigerian Security and Civil Defence Corps officers and the Nigerian police force) were also interviewed in order to evaluate the level of road users to traffic rules and regulations in Minna metropolis and also assess the impact of traffic rules and regulations on road users in Minna metropolis.

The secondary data collected for this dissertation includes; Literature on compliance of road users to traffic rules and regulations, local and international journal publications, and other internet publications, these were used for the purpose of building up literature on the subject of Compliance of road users to traffic rules and regulations as it relates to this research topic and to examine the level of compliance of road users to traffic rules and regulations and also to Evaluate the impact of traffic rules and regulations on the road users. Interviews and traffic count field survey would be used to collect primary data from the road users within Minna Metropolis. The questions for the interviews and mode of traffic counts would be designed according to the four objectives of the research. This structure is aimed at ensuring that, enquiries and questions asked are of relevance to, and addressing specific objectives of the research. This research adopted the descriptive statistical method for its data analysis.

4. Analysis and Discussions

4.1 Assessment of the Awareness and Perception of Road Users to Traffic Rules and Regulations

The first objective of this study is to assess the level of awareness and the perceptions of road users within Minna Metropolis to Traffic rules and regulations, this was achieved by conducting in-depth interviews with the various road users within Minna Metropolis in line with the scope of the research namely; National Commercial Tricycle and Motorcycle Owners and Riders association Minna branch, private vehicle and motorcycle owners within Minna metropolis, Niger state transport authority (NSTA) drivers, National Union of Road Transport Workers (NURTW) and individual tricycle and motorcycle owners.

The level of awareness of the various stakeholders was evaluated based on the interview conducted. The National Union of tricycle owners and rider's association opined that the members of the association are very familiar with the rules and regulations guiding traffic signals in the Metropolis, a position also taken by the National Union of Road transport workers; Motorcycle operators and private vehicle owners interviewed for the research. This position is however, at variance with the observations made in the cause of the field work as the survey conducted indicated that all the classes of road users identified in the metropolis often violate the red light rule. This is further reinforced by the scenario captured in Plates I, II and III.

Figure 2. Red Light Running by Taxis

Figure 3. Red Light Running, NSTA Bus

Figure 4. Red Light Running, Private Vehicles

4.2 Level of Adherence of Road Users to Traffic Rules and Regulations

Personal observation of road users was carried out within Minna on selected strategic points where traffic lights are positioned to examine the level of adherence of road users to traffic rules and regulations. The traffic count was conducted at six points namely; Shiroro road intersection, Top Medical/Paiko road intersection, and Obasanjo Complex road for a period of three days (Monday, Thursday and Saturday), while another three points namely; Government House road, High Point International School junction along Shiroro road and Mobil axis for only a day. The survey was carried at specific peak hours when traffic is known to be much; 8:00am to 10:00am, 12:00pm to 2:00pm and 4:00pm to 6:00pm. The results from the counts are thus presented in Table 1.

Table 1. Red Light Running Along Shiroro Road, Minna. Source: Medayese et al., 2016

DAYS	Vehicle Categories / Time	Commercial Motorcycles	Private Motorcycle	Tri –cycles	Commercial Vehicles	Private Vehicles	TOTAL	
							Hrs	Days
Mon 08-08-2016	8:00am – 10:00am	218	38	26	3	39	**324**	**2100**
	12:00pm – 2:00pm	443	199	71	5	285	**1003**	
	4:00pm – 6:00pm	328	175	49	0	221	**773**	
Thurs 11-08-2016	8:00am – 10:00am	157	44	11	0	48	**260**	**1930**
	12:00pm – 2:00pm	448	106	54	5	182	**1095**	
	4:00pm – 6:00pm	313	83	24	2	153	**575**	
Sat 13-08-2016	8:00am – 10:00am	198	34	16	1	26	**275**	**1850**
	12:00pm – 2:00pm	419	186	37	2	201	**1007**	
	4:00pm – 6:00pm	276	80	23	0	189	**568**	
TOTAL	**2800**	**945**	**311**	**180**	**1344**			**5880**

It can be observed from Table 1, that the highest red light violations were recorded in the afternoon specifically between the hours 1:00pm and 2:00pm; this is as a result of the dismissal of Vehicle Inspection Officers (VIO) who is normally actively stationed on the road between 8:00am and 1:00pm daily. The drastic change as observed from the number of violations in the Morning and later in the Afternoon makes it very obvious that road users tend to obey the stop signal on the traffic light because of the presence of Enforcement Agencies such as the Vehicle Inspection Officers. Also, Table 1 shows that the commercial motorcyclists are by far the worst culprits of traffic light violation. This can be attributed to their swift maneuvering ability and the non-existence of motorcycling license.

Table 2. Red Light Running Along Top Medical Junction/Paiko Road Intersection. Source: Medayese et al., 2016

Days	Vehicle Categories / Time	Commercial Motorcycles	Private Motorcycle	Tri –cycles	Commercial Vehicles	Private Vehicles	TOTAL	
							Hrs	Days
Mon 08-08-2016	8:00am – 10:00am	218	67	46	13	79	**423**	**2380**
	12:00pm – 2:00pm	403	203	101	17	385	**1109**	
	4:00pm – 6:00pm	328	195	89	15	221	**848**	
Thurs 11-08-2016	8:00am – 10:00am	161	54	31	9	78	**333**	**2273**
	12:00pm – 2:00pm	488	126	124	15	282	**1035**	
	4:00pm – 6:00pm	353	93	94	12	353	**905**	
Sat 13-08-2016	8:00am – 10:00am	198	32	36	10	76	**352**	**2029**
	12:00pm – 2:00pm	409	154	137	18	291	**1009**	
	4:00pm – 6:00pm	286	90	93	10	189	**668**	
TOTAL	**2844**	**1014**	**311**	**179**	**1344**			**6682**

The Table 2 shows that most red light violations were done generally in the evening specifically between 04:00pm – 06.00pm, commercial motorcycles with a record of 2800 out of 5579 being the worst culprits. Generally, out of the 5579 violations recorded, commercial vehicles (motorcycles, tricycles, cars,) violates more than private vehicles. This is due to the nature of activities within the area which is majorly commercial. The least vehicle category that violate are the commercial vehicles. This is so because of the drastic reduction in patronage with the introduction of tricycles and availability of commercial motorcycles in Minna metropolis.

Table 3. Red Light Running Along Obasanjo Complex Road, Minna. Source: Medayese et al., 2016

DAYS	Vehicle Categories / Time	Commercial Motorcycles	Private Motorcycle	Tri –cycles	Commercial Vehicles	Private Vehicles	TOTAL	
							Hrs	Days
Mon 08-08-2016	8:00am – 10:00am	210	38	36	2	39	**325**	**2268**
	12:00pm – 2:00pm	471	299	91	7	285	**1153**	
	4:00pm – 6:00pm	328	185	49	3	225	**790**	
Thurs 11-08-2016	8:00am – 10:00am	167	54	43	2	48	**314**	**1858**
	12:00pm – 2:00pm	448	136	74	5	182	**845**	
	4:00pm – 6:00pm	343	93	104	6	153	**699**	
Sat 13-08-2016	8:00am – 10:00am	198	34	33	1	26	**292**	**1738**
	12:00pm – 2:00pm	319	184	107	2	201	**813**	
	4:00pm – 6:00pm	278	80	84	2	189	**633**	
TOTAL	**2920**	**1055**	**611**	**30**	**1340**			**5864**

The commercial motorcycles and private vehicles top the chart of red light violation along Obasanjo Complex road as seen in Table 3. This proves that commercial transportation is the most employed means of transport on this route because of the commercial activities that takes place there.

Table 4. Red Light Running Along Mandela Junction, Shiroro Road. Source: Medayese et al., 2016

Vehicle Categories / Time	Commercial Motorcycles	Private Motorcycle	Tri -cycles	Commercial Vehicles	Private Vehicles	TOTAL
8:00am-10:00am	52	21	16	2	209	**300**
12:00pm-2:00pm	93	56	58	0	288	**495**
4:00pm-6:00pm	77	58	49	0	394	**578**
TOTAL	**222**	**135**	**123**	**2**	**891**	**1095**

From the Table 4, it can be seen that private motorists are the worst culprits since commercial vehicles rarely ply the road because it is an exit route from the metropolis and there is no motor park along the road. It was also observed and recorded in the table above that most violations occurred in the evening because most people who come into the town from Abuja arrive in the evening and those who exit the town using that route also take off in the evening.

Table 5. Red Light Running along Government House road, Minna. Source: Medayese et al., 2016

Vehicle Categories / Time	Commercial Motorcycles	Private Motorcycle	Tri -cycles	Commercial Vehicles	Private Vehicles	TOTAL
8:00am-10:00am	57	16	16	9	36	**134**
12:00pm-2:00pm	95	31	73	32	98	**329**
4:00pm-6:00pm	102	64	98	64	119	**447**
TOTAL	**254**	**111**	**187**	**105**	**253**	**910**

It can be seen from Table 5 above that the number of red light violations are not as much as the other roads because aside Zenith bank, there is no other major activity or building along the road.

Table 6. Red Light Running Along Mobil Axis, Minna. Source: Medayese et al., 2016

Vehicle Categories / Time	Commercial Motorcycles	Private Motorcycle	Tri -cycles	Commercial Vehicles	Private Vehicles	TOTAL
8:00am-10:00am	85	38	75	8	142	**348**
12:00pm-2:00pm	574	173	443	17	883	**2090**
4:00pm-6:00pm	398	92	407	13	906	**1816**
TOTAL	**1057**	**303**	**925**	**38**	**1931**	**4254**

Most red light violations were between the hours of 12:00pm-02:00pm and 04:00pm-06:00pm and commercial motorcyclists and private motorists are the highest number of violators recorded along Mobil axis. The well-known Obasanjo Complex which attracts a good number of people lack enough parking spaces for workers and customers and therefore people are forced to park their vehicles along the road side. This eventually causes traffic jam along the road on a frequent basis and those who escape the jam, are in a hurry to get to their destination and they end up running the red light ahead. This is one of the major reasons for violation around this area.

Table 7. Comprehensive Report Showing the Number of Violators at the three major Traffic Points from Survey Locations. Source: Medayese et al., 2016

Days	Shiroro Road Intersection	Top Medical/Paiko Road Intersection	Obasanjo Complex Road
Day 1 Monday	2100	2380	2268
Day 2 Thursday	1930	2273	1858
Day 3 Saturday	1850	2029	1738
Total	**5880**	**6682**	**5864**

Table 7 presents a summary of the number of violators from the different categories of road users that ply the three major traffic points in Minna metropolis. In general, the number of violators as seen from the field survey of traffic counts of violators coupled with the records from the Road Traffic Enforcement Agencies/Regulators, it is clear that there is a high degree of violations. This is in sharp contrast to the position of the road users on adherence to road traffic rules as earlier interviewed. This shows that there is no integrity in the response gotten from road users. This calls for the need to further examine the factors influencing the road user's non-adherence to road traffic rules and regulation. The table also reveals that the traffic violations recorded along Shiroro road is the least among the other locations. This is due to the presence of Vehicle Inspection Officers who are stationed on the road from 08:00am till 01:00pm on weekdays and it also proves that road users adhere or comply with traffic rules more with the presence of Law Traffic control/regulation Officers on the roads. Furthermore, it can be seen in the table above that most violations occur during weekdays because workers all over Minna metropolis tend to be in a rush to get to work early enough in the morning and also, parents pick their children from school during the day especially between 02:00pm and 04:00pm. All these reasons contribute to the level of adherence of road users during the week days.

4.3 Factors That Influence the Non-Adherence of Road Users to Traffic Rules and Regulations

In order to examine the factors that influence non-adherence of road users to traffic rules and regulations, various interviews were conducted with road users of various categories and respective law enforcement agencies that are in charge of regulating/controlling traffic and ensuring safety on the roads within Minna metropolis.
The results of the interviews are given below:

4.3.1 Interview with Commercial and Private Road Users

As stated earlier, the commercial road users maintained the position that they judiciously obey the red light rule so it was impossible to get the stakeholders interviewed to give the reasons for violation. However, private vehicle owner/road user admitted that he does not comply to traffic rules because the traffic lights are not programmed so he uses His discretion to move or stop.

4.3.2 Interview with VIO and FRSC Officers

To The Vehicle Inspection Officers opined that the major reason why road users in Minna metropolis (especially motorcyclists) run the red light is lack of patience and lawlessness of road users, they came to this conclusion because of their observation of the attitude of road users along Shiroro road where they are stationed on a daily basis from 08:00am to 01:00pm daily on week days to regulate and regulate traffic the VIO officers observed that the road users tend to obey the red light more in their presence than in their absence because of fear of being penalised. A scenario of road user's attitudes in the presence and absence of trafffic control/regulation Officers along Top Medical Junction road is presented in Plate IV and V.

Figure 5. Instance of Adherence of Road Users to Traffic rules in the Presence of FRSC Officers

Figure 6. Instance of Adherence of Road Users to Traffic rules in the Presence of FRSC Officers

4.4 Impact of Road Traffic Rules and Regulation on the Road Users

Results from the survey carried out at the six designated traffic light intersections in Minna metropolis and the interviews conducted with FRSC/VIO Officers, there is little or no impact of road traffic rules and regulations on the road users in Minna metropolis. According to one of the FRSC Officers interviewed; "There has been no notable difference in the number of accidents recorded or the level of adherence to road traffic rules and regulation by the road users in Minna metropolis, before and after the traffic lights were installed at the six designated intersections considered in this research." This is because there is little or no enforcement of road traffic rules and regulations by the Enforcement Agencies of Government, which has led to the continuous low level of adherence among road users in Minna metropolis to road traffic rules and regulation. Understandably, there are certain factors that are responsible for the little or no enforcement on the part of the FRSC/VIO Officers;

i. Inadequate man power to man all traffic lights intersection 24 hours a day, 7 days a week.

ii. Bad example to traffic rules and regulation being set by government officials and the "who is who" in the city.

iii. Indiscipline and poor orientation among the road users in Minna on "driving on the road" and "the dangers of violation of road traffic rules and regulation".

4. Recommendation

i. It was observed that traffic wardens were seen with batons and sticks used to warn or discourage intending red light runners. This could be adopted as any offender stands the risk of being beaten or his vehicle damaged if not caught and prosecuted either by Mobile courts or main courts.

ii. Imposition of penalties on offenders – the research suggests imposition of fines, jail term on any erring vehicle user. The penalties could be displayed in billboards or on the posts of the traffic lights.

iii. Installation of red light cameras – this is an automated device that is connected to the red light signal and captures the image and plate number of violating vehicle when the red light turns on.

iv. Introduction of cross bars – cross bars is automated horizontal bars that are connected to the traffic lights. It should be in a way that when the green light changes to yellow or amber as the case may be, the bar starts coming down. It should be very visible from a distance and should be adorned with reflective. This would go a long way to enhance the adherence of road users within Minna metropolis to traffic rules because they would be left with no option than to obey the red lights in order to secure their vehicles from any form of damage that could be related with colliding with the cross bars.

v. Employing tracking agents – in this case, tracking agents should be employed and stationed on every traffic light point as practiced along Shiroro road. The agents are to be equipped with motorbikes and vehicles with public address system to facilitate catching of violators. By extension, it will create employment to the unemployed and also generate funds that could be ploughed back into the maintenance of the lights once tracked and booked. Finally, the adoption of any recommendation or combinations of the recommendations if not all is very imperative to reduce the incidences of red light running violation and its attendant consequences.

5. Conclusion

In conclusion, the research study shows that there is high level of awareness of road traffic rules and regulation among road users in Minna Metropolis. However, there is high level of non-adherence to road traffic rules and regulation by the same road users. Also, it was observed that in the case where a vehicle user violates, there is usually the tendency of others following suit. This is as a result of the inability of FRSC/VIO to enforce the penalties of non-adherence to road traffic rules and regulation. The research further reveals that there is no serious enforcement of penalties to violation of road traffic rules and regulations on the part of the Law Enforcement Agencies of Government in Minna Metropolis.

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